

CLAIMS

1. A power supply control method comprising:
5 coupling an input of a power supply system to receive
an input voltage having a period;
 coupling a load to receive the input voltage;
 forming a power supply controller to generate a load
current through the load when the input voltage is greater
10 than a first voltage; and
 forming the power supply controller to disable the
load current when the input voltage is greater than a
second voltage.
- 15 2. The method of claim 1 further including forming
the power supply system to disable the load current when
the input voltage is less than the first voltage.
3. The method of claim 1 wherein coupling the input
20 of the power supply system to receive the input voltage
includes coupling the input of the power supply system to
receive a rectified dc voltage.
4. The method of claim 1 wherein forming the power
25 supply controller to generate the load current through the
load when the input voltage is greater than the first
voltage includes forming the power supply controller to
drive an output transistor of the power supply controller
in a liner mode to generate an instantaneous current that
30 averages to a desired average current over the period.

5. The method of claim 4 wherein forming the power supply controller to disable the load current when the input voltage is greater than the second voltage includes forming the power supply controller to disable the load
 5 current when a voltage drop across the output transistor is a third voltage that is representative of the second voltage.

6. The method of claim 4 wherein forming the power
 10 supply controller to drive the output transistor of the power supply controller in the liner mode to generate the instantaneous current includes forming the power supply controller to generate an averaged signal that is
 representative of an average value of the load current.

7. The method of claim 6 wherein forming the power supply controller to drive the output transistor of the power supply controller in the liner mode to generate the instantaneous current includes forming the power supply
 20 controller to generate a deviation signal representative of a difference between the averaged signal and a reference signal, and to generate an error signal representative of a difference between the deviation signal and the instantaneous current.

8. The method of claim 1 wherein forming the power supply controller to generate the load current through the load when the input voltage is greater than the first voltage; and forming the power supply controller to
 30 disable the load current when the input voltage is greater than the second voltage includes forming the power supply controller to generate the load current each time the input voltage is greater than the first voltage and less than the second voltage.

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9. A power supply controller comprising:
 an averaging circuit coupled to receive an input
 signal representative of a load current through a load of
 the power controller and form an averaged signal
 5 representative of an average value of the load current;
 a first amplifier coupled to receive the averaged
 signal and a first reference voltage and responsively form
 a deviation signal representative of a difference between
 the averaged signal and the first reference voltage;
 10 a second amplifier coupled to receive the deviation
 signal and the input signal and responsively drive an
 output transistor to generate the load current through the
 load on a current output of the power controller; and
 a disable circuit coupled to responsively disable the
 15 output transistor when a voltage across the output
 transistor is greater than a first value.

10. The power supply controller of claim 9 wherein
 the averaging circuit coupled to receive the input signal
 20 representative of the load current through the load of the
 power controller and form the averaged signal
 representative of the average value of the load current
 includes a transconductance amplifier coupled to receive
 the input signal and a filter coupled to an output of the
 25 transconductance amplifier.

11. The power supply controller of claim 9 wherein
 the averaging circuit coupled to receive the input signal
 representative of the load current through the load of the
 30 power controller and form the averaged signal
 representative of the average value of the load current
 includes a sense circuit coupled to receive the load
 current, generate a sense current representative of the
 load current, generate a sense voltage from the sense
 35 current, and use the sense voltage as the input signal.

12. The power supply controller of claim 9 wherein
the disable circuit coupled to responsively disable the
output transistor when the voltage across the output
transistor is greater than the first value includes a
5 comparator coupled to receive the voltage across the
output transistor and a reference voltage and responsively
disable the output transistor.

13. The power supply controller of claim 12 wherein
10 the comparator coupled to receive the voltage across the
output transistor and the reference voltage and
responsively disable the output transistor includes the
comparator coupled to disable the output transistor when
the first voltage is between two and fifteen volts.

14. The power supply controller of claim 9 wherein
the first amplifier coupled to receive the averaged signal
and a first reference voltage includes a differential
amplifier.

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15. A method of forming a power supply controller comprising:

coupling an output transistor to form a load current through a load that is coupled to an output of the power

5 supply controller;

forming an averaging circuit to receive an input signal representative of the load current and responsively form an averaged signal representative of an average value of the load current;

10 forming the power supply controller to generate a deviation signal representative of a difference between the averaged signal and a desired constant;

forming the power supply controller to drive the output transistor responsively to a difference between the
15 deviation signal and the input signal to generate an instantaneous value of the load current that will result in an average value of the load current over a first time period; and

forming a disable circuit coupled to responsively
20 disable the output transistor when a voltage across the output transistor is greater than a first value.

16. The method of claim 15 wherein forming the disable circuit coupled to responsively disable the output
25 transistor when the voltage across the output transistor is greater than the first value includes forming the disable circuit to disable the output transistor at least once during the first time period.

17. The method of claim 15 wherein forming the averaging circuit to receive the input signal representative of the load current and responsively form the averaged signal representative of the average value of the load current includes coupling a first amplifier to receive the input signal, coupling a filter to receive an output of the first amplifier, and coupling the output of the first amplifier to an input of a second amplifier.

18. The method of claim 15 wherein forming the power supply controller to generate the deviation signal representative of the difference between the averaged signal and the desired constant includes forming a deviation circuit having an amplifier coupled to receive the averaged signal and a reference signal and responsively form the deviation signal representative of the difference between the averaged signal and the reference signal.

19. The method of claim 15 wherein forming the power supply controller to drive the output transistor responsively to the difference between the deviation signal and the input signal includes forming the output transistor to sink the load current from the load wherein the load current is supplied by a rectified dc voltage applied to the load and wherein a period of the rectified dc voltage forms the first time period.

20. The method of claim 15 wherein forming the disable circuit coupled to responsively disable the output transistor when the voltage across the output transistor is greater than the first value includes forming a
5 comparator coupled to receive the voltage across the output transistor and receive a reference voltage and responsively disable the output transistor when the voltage across the output transistor is greater than the reference voltage.

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